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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Philip N. Bryan

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INTELLECTUAL PROPERTY / TECHNOLOGY LAW

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RESEARCH TRIANGLE PARK, NC 27709

EXAMINER

MOORE, WILLIAM W

ART UNIT

PAPER NUMBER

1656

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/567,073	<b>Applicant(s)</b> BRYAN, PHILIP N.	
	<b>Examiner</b> WILLIAM W. MOORE	<b>Art Unit</b> 1656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2009 and 12 May 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-62 is/are pending in the application.
- 4a) Of the above claim(s) 18-45 and 50-61 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 11-17, 46-49 and 62 is/are rejected.
- 7) ☒ Claim(s) 9 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION*****Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submissions filed on 27 February, 30 March, and 12 May 2009 have been entered. This communication is not made Final in view of new grounds of rejection herein.

***Response to Amendment***

Applicant's Amendment filed 27 February 2009 amends claims 1, 3-8, 10, 13-15, 18, 46, 48, and 49, and adds the new claim 62. Claims 1-62 remain in the application, of which claims 18-45 and 50-61 remain withdrawn from consideration pursuant to Applicant's election of the invention of Group 1 in the reply filed 18 January 2008. Methods and products of the invention of Group 1 comprise nucleic acid constructs encoding fusion proteins that comprise a "protease prodomain", and the specification provides modified subtilisin prodomains that bind a mature subtilisin protease with "high affinity" – defined at page 18 of the specification as the "ability of the protease prodomain to bind to the cognate protease with a  $K_d$ " – a dissociation constant – "of nM to pM and ranging from about 10 nM to about 10 pM, preferably <100 pM". The specification also discloses several cognate proteases, such as the modified subtilisin BPN' species S189, S190, S196, S197, S198, S199, and S201. The prior art of record herein shows that other subtilisin prodomains share substantial amino acid sequence similarity with the subtilisin BPN' prodomain amino acid sequence set forth in SEQ ID NO:2. The amendments overcome the objection of record to the specification for lack of a statement of a Sequence Identifier in claim 10, and the objection is WITHDRAWN. Applicant's arguments are persuasive with respect to the rejection of record of claims herein under 35 U.S.C. § 103(a) combining the teachings of Van Rooijen et al. and Grøn et al., of record, and this rejection is RESTATED in further combination in view of the teachings of other prior art of record.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claims 3, 7, and 13 remain rejected for reasons of record under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant's arguments filed 12 May 2009 have been fully considered but they are not persuasive. Applicant suggests at pages 13-16 of the Response filed 27 February 2009 that definition at pages 14 and 15 of the specification wherein "predetermined amino acid residues . . . may be substituted, inserted, or deleted", and the amendatory term "protease prodomain protein" whereby the claims recite "the protease prodomain further comprises . . . substitutions that increase binding affinity for a subtilisin . . . as compared to the protease prodomain with no substitutions", renders claims 3, 7, and 13 definite. Applicant also suggests that a discussion at page 3 of the specification may somehow be read into claims 3, 7 and 13 in order that at least a class of starting prodomains - the prodomains of subtilisin proteases - might be considered a definite starting point. Yet the claim amendments fall short of indicating any structural class of protease prodomains and even a further amendment to introduce the terms "wherein a subtilisin protease prodomain protein further comprises . . . substitutions. . . as compared to the subtilisin protease prodomain protein with no substitutions" would not permit the artisan and the public, seeking to determine the scope of the intended subject matter to distinguish between a subtilisin protease prodomain that is not a variant from a subtilisin protease prodomain that is a variant" having the changed function recited in the claims, "increased affinity". Any native prodomain, including a subtilisin prodomain, may differ from another native prodomain, compare, e.g., the subtilisin BPN' prodomain of SEQ ID NO:2 with the native subtilisin 309/SAVINASE™ prodomain altered by Grøn et al. by apparent, relative, amino acid substitutions and the artisan and the public cannot ascertain the scope of claims 3, 7, and 13 unless a reference structure of a prodomain protein before substitutions are made is identified in the recitations of the claims. This is particularly the case where some substitutions of Grøn et al. are made at amino acid positions identified by Applicant positively influence binding affinity with a subtilisin protease while other, naturally occurring, amino acid sequence variations, if taken as substitutions, may negatively influence binding affinity. Since a variant prodomain according to the claims must have an increased binding affinity to a generic subtilisin, or to a generic variant of the generic subtilisin, the absence of any basis for defining a starting point for determining what is, and what is not, a prodomain with no substitutions leaves the scope of claims 3, 7 and 13 indeterminate and indefinite. The rejection of record is therefore sustained.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 USC § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1, 46, and 47 remain rejected for reasons of record under 35 USC § 102(e) as being anticipated by Van Rooijen et al., **US 7,531,325** made of record herewith and previously applied as US 2003/0166162 in the rejection of record.

Applicant's arguments at pages 20-22 of the Remarks filed 12 May 2009, as well as at pages 16-21 of the Remarks filed 27 February 2009, have been fully considered but they are not persuasive. Claim 1 is amended to require that a nucleic acid construct encode a fusion protein that, in addition to a generic "protein of interest" further comprises a generic protease prodomain and that an encoded protease prodomain bind with "high affinity" to a generic protease and, while claim 46 enjoys the latter amendment, it has a broader scope where it requires only that nucleic acid construct encode a fusion protein, have a region encoding a generic "protein of interest", and another region encoding a generic "second protein". Applicant notes that "high affinity" is defined at page 18 of the specification, and the broadest range of the three provided in that definition, a dissociation constant of "nM to pM" is applied to construe the scope of claims 1, 46 and 47. Thus a dissociation constant cannot reach "mM" (1,000 nM) and must be at least 1 pM. Applicant's arguments about intended use are not germane where no use can be inferred from the recitations of the claims rejected herein. This is because claim 1 requires that an encoded polypeptide product comprise two distinct components, "operatively linked", but requires no particular orientation thereof, and neither claim 1 nor claim 46 exclude further amino acid sequence regions, such as a protease catalytic domain, from covalent association with a two-component fusion protein of claim 1 or from covalent association with a fusion protein that comprises either of the separate, indistinguishable, components of claim 46.

Applicant's discussion of the associations of, and distinctions between, binding affinity and catalysis in the Remarks filed 27 February 2009 is noted but the broad range of dissociation

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constants included in the specification's definition – over 5 orders of magnitude – cannot provide a basis for avoiding the disclosure of Van Rooijen et al. of the preparation of polynucleotides encoding fusion polypeptides comprising any one of several modified chymosin prodomains fused directly to the amino terminus of any of several desired, carboxyl-proximal, polypeptide fusion partners wherein a modified prodomain present in the recombinantly expressed fusion polypeptides is disclosed to have an improved affinity for a “cognate” protease, chymosin, as shown by increased yields of cleaved fusion partner achieved, relative to that achieved with an unmodified chymosin prodomain. Van Rooijen et al. also disclose the use of the prodomain as a separable component for purification of desired fusion partners by affinity chromatography, including hormones, as well as the use of various host cells for the recombinant production of fusion polypeptides, including several host cells of claim 17 herein. See columns 1-2, 6-9, and 11-17 and Figures 2, 3, and 6-12. The binding affinity, as dissociation constant, for chymosin of modified chymosin prodomains of Van Rooijen et al. clearly supports binding and cleavage by a cognate protease yet is not so great as to inhibit cleavage, thus is considered to inherently be within the broad range of “nM to pM”. Thus the rejection of record of record is sustained.

Claims 1-3, 5, 12-14, 17, and 46 are rejected under 35 USC § 102(b) as being anticipated by Ruan et al., 1998, made of record with Applicant's IDS filed 13 October 2008.

This is a new ground of rejection. Ruan et al. 1998 disclose the preparation of several nucleic acid constructs, based on the phagemid pHEN1, comprising DNA constructs encoding any of several fusion proteins wherein the bacteriophage gene III protein is fused either to the wild-type (wt) subtilisin BPN' prodomain, or fused to various variant subtilisin BPN' prodomain amino acid sequences, and further disclose a method for producing the variant subtilisin BPN' prodomain-comprising fusion proteins by recombinant expression in *E. coli* cells transfected with their pHEN1-based nucleic acid constructs, comprising culturing the host cells under conditions suitable for expression of the various variant subtilisin BPN' prodomain-comprising fusion proteins. See the paragraph captioned "Vector construction" and following paragraphs at page 2352, as well as Tables 1 and 2 at pages 2348 and 2350, and Figure 6 at page 2350. The disclosures of Ruan et al. 1998 meet the limitations of claims 1-3, 5, 12-14, 17, 46, and 47 because the claims require no particular basis for "interest" in a fusion partner of any variant subtilisin prodomain and the gene III protein is clearly of interest to, and advantageous for, Ruan et al., and the rejected claims require no particular orientation for a subtilisin prodomain or for a “protein of interest” within a fusion protein, and also because the wild type and variant subtilisin

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prodomains in the fusion polypeptides of Ruan et al. 1998 inherently bind a subtilisin protease within the broad range of dissociation constants stated at page 18 of the specification.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 USC § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 6-8, 11, 15, 16, and 47-49 are rejected under 35 USC § 103(a) as being unpatentable over Ruan et al., 1998, as applied to claims 1-3, 5, 12-14, 17, and 46 above, in view of Grøn et al., 1996, Grøn et al., 1992, and Van Rooijen et al., all of record.

Applicant's arguments at pages 21-26 of the Remarks filed 27 February 2009, and at pages 22 and 23 of the Remarks filed 12 May 2009, have been fully considered but are moot in view of the new grounds of rejection. Teachings of Ruan et al., discussed above, are taken as before and their further teaching that the prodomain amino acid substitutions, "mutations", selected by their process of variegation "that stabilize the folding of the prodomain will increase binding to subtilisin [protease]" are now emphasized. See the first paragraph of the section captioned "Results" at page 2347. Ruan et al. further teach selection of stabilizing mutations in regions of the 77-amino acid sequence of the prodomain of subtilisin BPN' "that do not have potential contacts with subtilisin", including the four positions 23, 27, 37 and 40, that provide a "pro-R1" prodomain variant which can accelerate proper folding of the mature subtilisin BPN' protease. See Figure 1 and compare Figures 6A and 6B. Grøn et al. 1996 teach the use of modified peptide substrates representing the P4-P3-P2-P1 peptide of a generic, unmodified, prodomain to guide the preparation of amino acid substitutions at the P4 position of a subtilisin prodomain wherein a substitution introducing phenylalanine permits the modified prodomain to better bind a subtilisin protease than the unmodified prodomain, where the "P4 position", which corresponds to the P4 subsite binding pocket in the tertiary structure of a subtilisin protease, is the fourth amino acid from a subtilisin prodomain's carboxyl-terminus, i.e., position 74 of SEQ ID NO:2 herein. Grøn et al. 1996 further teach the preparation of nucleic acid constructs encoding both modified subtilisin proteases and modified subtilisin prodomain, wherein the P4 position is modified by introducing phenylalanine. Grøn et al., 1992, teach that both of the commercially prominent subtilisins, BPN' and 309/SAVINASE™, better bind a P4 position amino acid having

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an aromatic side chain, such as phenylalanine, have little preference for the P3 position amino acid but accept charged positively-charged amino acids at this position, better bind a P2 position amino acid that is alanine, and better bind a P1 position amino acid that is alanine, phenylalanine, or leucine. See Tables II and III and the accompanying discussion that spans pages 6014-6016.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to prepare a nucleic acid construct comprising a DNA construct encoding a fusion polypeptide wherein a stabilized subtilisin BPN' prodomain modified according to the teaching of Ruan et al. replaces a modified chymosin prodomain of van Rooijen et al. adjacent to a desired fusion partner, such as a hormone according to Van Rooijen et al., and to further modify the stabilized subtilisin BPN' prodomain according to the teachings of Grøn et al. 1996 and Grøn et al. 1992 to have a phenylalanine at the P4 position, a positively-charged amino acid, such as lysine, at the P3 position, an alanine at the S2 position, and any of phenylalanine, alanine, or leucine at the S4 position, according to claims 4, 6 and 47-49 herein and to recombinantly express such a fusion polypeptide in an *E. coli* or yeast cell host cell transfected according to Van Rooijen et al. with the nucleic acid construct in a method of claims 15 and 16 herein, in order to recombinantly produce a fusion protein of claims 7, 8, and 11 herein. This is because such an artisan would have appreciated the advantages in replacing a chymosin prodomain in an encoded fusion protein of van Rooijen et al. with a stabilized subtilisin BPN' prodomain modified according to the teachings of Ruan et al. and that further comprised, at least, the carboxyl-terminal FKAF prodomain modification made obvious by the teachings of Grøn et al., 1992, and Grøn et al., 1996, i.e., the advantage of using a commercially accessible protease to release a desired fusion partner, such as a hormone, from a prodomain having stability and optimized binding interactions with the protease particularly where the carboxyl-terminal FKAF prodomain modification is a member of only a small set of carboxyl-terminal prodomain modifications taught to be better recognized by subtilisins according to Grøn et al., 1992. "The question is not whether the combination was obvious to the patentee but whether the combination was obvious to a person with ordinary skill in the art. Under the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the [prior art] can provide a reason for combining the elements in the manner claimed." *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1398 (U.S. 2007). Based upon the teachings of the cited references, the level of skill of one of ordinary skill in the art, and absent any evidence to the contrary, there would have been a reasonable expectation of success in practicing the claimed invention.



*Claim Rejections - 35 USC § 112*

The following is a quotation of the first paragraph of 35 U.S.C. § 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 62 is rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention.

The new claim 62 is drawn to a nucleic acid construct encoding a fusion protein comprising a generic prodomain that "binds to a protease or a variant above with a [dissociation constant] of less than 10 nM" but the specification describes no basis for assessing the structure of any and all classes of protease prodomains and determining how to select modifications thereof of to achieve the required dissociation constant. Indeed, the prior art and the specification both show that amino acid sequence modifications in both protease prodomains and their cognate proteases are possible only when the three-dimensional structures of both a mature protease catalytic domain and a protease prodomain have already been determined, as is the case with several subtilisin catalytic domains and, at least, the subtilisin BPN' prodomain. There is no indication in the specification that Applicant possessed a representative number of species of modified prodomains other than subtilisin prodomains, or a representative number of species of protease catalytic domains, other than modified subtilisin catalytic domains, with which to design claimed products or with which to practice a claimed method. "While one does not need to have carried out one's invention before filing a patent application, one does need to be able to describe that invention with particularity" to satisfy the description requirement of the first paragraph of 35 U.S.C. § 112. *Fiers v. Revel v. Sugano*, 25 USPQ2d 1601, 1605 (Fed. Cir. 1993). The specification fails to exemplify, describe, or even suggest how to modify any prodomain but a subtilisin prodomain, or how to modify any protease catalytic domain, to achieve the degree of affinity, as measured by dissociation constant, recited in claim 62.

Claim 62 is rejected under 35 U.S.C. § 112, first paragraph, because the specification, while being enabling for the preparation of nucleic acid constructs encoding a fusion protein comprising a subtilisin prodomain modified so that it can exhibit the degree of binding affinity recited in claim 62, when binding a subtilisin catalytic domain modified to permit the degree of binding affinity of a modified subtilisin prodomain, does not reasonably provide enablement for preparing nucleic acid constructs encoding a fusion protein comprising a generic protease prodomains modified so that it might exhibit the degree of binding affinity recited in claim 62. The specification does not enable any person skilled in the art to which it pertains, or with which

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it is most nearly connected, to make and use the invention commensurate in scope with these claims.

Claim 62 requires a degree of prodomain:catalytic domain binding affinity, measured as a dissociation constant, that the specification and prior art together show took over a decade to develop, well after the three-dimensional structures of several subtilisin catalytic domains had been resolved by x-ray diffraction analysis. Even when the three-dimensional structures of members of other classes of protease catalytic domains are determined, and three-dimensional structures of their prodomains are determined, mere sequence perturbation cannot enable the design and preparation of a myriad of protease prodomains of different classes of proteases unrelated to the subtilisin prodomains enzymes that will attain the degree of binding affinity required by the rejected claim, where the only structures for which the instant application provides guidance are subtilisin prodomains. It is well settled that 35 U.S.C. § 112, first paragraph, requires that a disclosure be sufficiently enabling to allow one of skill in the art to practice the invention as claimed without undue experimentation and that unpredictability in an attempt to practice a claimed invention is a significant factor supporting a rejection under 35 U.S.C. §112, first paragraph, for non-enablement. See, *In re Wands*, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988) (discussing eight factors relevant to analysis of enablement). The standard set by the CCPA, the precursor of the Court of Appeals for the Federal Circuit, is not to "make and screen" any and all possible alterations because a reasonable correlation must exist between the scope asserted in the claimed subject matter and the scope of guidance the specification provides. *In re Fisher*, 427 F.2d 833, 839, 166 USPQ 18, 25 (CCPA 1970) (scope of enablement varies inversely with the degree of unpredictability of factors involved in physiological activity of small peptide hormone). The Federal Circuit approved this standard set by the CCPA in *Genentech, Inc. v. Novo-Nordisk A/S*, 42 USPQ2d 1001 (Fed. Cir. 1997). Applying the factors discussed in *Wands* to Applicant's disclosure, it is apparent that:

- a) the specification lacks adequate, specific, guidance for altering the amino acid sequences of prodomains other than subtilisin prodomains to attain the level of binding affinity recited in claim 62,
- b) the specification lacks working examples wherein the amino acid sequences of prodomains other than subtilisin prodomains are modified to attain the level of binding affinity recited in claim 62,
- c) in view of the prior art publications of record herein, the state of the art and level of skill in the art do not support the modification of prodomains other than subtilisin prodomains are modified to attain the level of binding affinity recited in claim 62, and,
- d) unpredictability exists in the art where no members prodomains other than subtilisin prodomains have had the necessary identification of stabilizing modifications needed to attain the level of binding affinity recited in claim 62.

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Thus the scope of subject matter embraced by the phrase, "binds to a protease of a variant thereof with a Kd of less than 10 nM", is supported by the present specification only for subtilisin prod domains even if taken in combination with teachings available in the prior art.

### ***Conclusion***

The subject matters of a modified subtilisin prod domain comprising the tetrapeptide of claim 9, a carboxyl-terminal nonapeptide having any of the six modifications represented by SEQ ID NO:7 herein of claim 10. These claims are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims. Amending claim 62 to provide a disclosed structural context for its recited dissociation would permit allowance of this claim where it is also free of the prior art of record herein.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William W. Moore whose telephone number is 571.272.0933 and whose FAX number is 571.273.0933. The examiner can normally be reached Monday through Friday between 9:00AM and 5:30PM EST. If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisory Primary Examiner, Andrew Wang, can be reached at 571.272.0811. The official FAX number for all communications for the organization where this application or proceeding is assigned is 571.273.8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571.272.1600.

/William W. Moore/  
Examiner, Art Unit 1656